Lab 5 Explanation Document

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All of these measurements are in MS.

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|  | qsort (C library) | unoptimized quicksort | optimized quicksort |
| lab5-gcc run 1 | 823 | 536 | 330 |
| lab5-gcc run 2 | 811 | 541 | 324 |
| lab5-gcc run 3 | 816 | 548 | 317 |
| lab5-clang run 1 | 816 | 537 | 559 |
| lab5-clang run 2 | 810 | 526 | 546 |
| lab5-clang run 3 | 812 | 536 | 553 |

Optimizations:

1. Both branch-free partitioning methods, including a swap between them depending on the compiler (check makefile, I added a flag).
2. Median-of-three pivoting to prevent worst-case pivot situation.
3. Insertion sort cut-off for improved speeds.

Takeaways:

GCC ran consistently better than Clang. Also, I learned how to use flags influence C code, very nice to know. Overall, a fun exercise on optimization.

--Colin